DOCUMENT RESUME

ED 315 418 SP 032 080

AUTHOR Ostrander, Ray; And Others
TITLE Teacher Supply and Demand in Nebraska. 1988-1994.
INSTITUTION Nebraska Univ., Lincoln. Bureau of Educational Research and Field Services.
PUB DATE Mar 88
NOTE 23p.; For related document, see SP 032 081.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Elementary Secondary Education; *Enrollment Projections; Faculty Mobility; Teacher Certification; *Teacher Distribution; *Teacher Shortage; *Teacher Student Ratio; *Teacher Supply and Demand
IDENTIFIERS *Nebraska

ABSTRACT

This study of the supply and demand for teachers in the State of Nebraska from 1988 through 1994 includes consideration of all teachers in grades kindergarten through 12 assigned to public and nonpublic schools. The study is reported in three major sections. Section I provides an executive summary of the projections of teacher supply and demand for the State of Nebraska. Second II relates methods and sources which support the projections given in Section I. Section III includes graphs, tables, and charts of detailed statistics which contribute to an understanding of information presented in the preceding two sections; the text includes references to relevant studies. (JD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED315418

TEACHER SUPPLY AND DEMAND IN NEBRASKA 1988 - 1994

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

W. Sybouts

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

SP032080

TEACHER SUPPLY AND DEMAND IN NEBRASKA 1988 - 1994

Bureau of Education Research and Field Services
Department of Education Administration
Teachers College
University of Nebraska - Lincoln

March 1988

Report Prepared By:

Ray Ostrander
John Prasch
Robert Stalcup
Cy Yusten
Linda Zech

SP

TABLE OF CONTENTS

Introduction 1

Section I Executive Summary 2

Ⓐ Projected Demand 2
Ⓑ Projected Supply 2
Ⓑ3 Reserve Pool 2
Ⓒ Projected Results of Supply and Demand 3

Section II 4

Introduction 4
Ⓐ Projected Demand 6
Ⓐ1 Projected Enrollment Growth 6
Ⓐ1 Calculating Pupil/Teacher Ratio 7
Ⓐ1 Demand Projections Due to Enrollment Growth 7
Ⓐ2 Demand Projections Due to Attrition 7
Ⓑ Projected Supply 8
Ⓑ1 Graduates from Nebraska 8
Ⓑ2 Graduates from Other States 9
Ⓑ3 The Reserve Pool 10
Ⓑ Total Supply 10
Ⓒ Projected Surplus: Summary of Supply and Demand 11

Section III 12

Ⓐ Projected Demand 12
Ⓐ1 Projected Enrollment Growth 12
Ⓐ2 Demand Projections Due to Attrition 12
Ⓑ Projected Supply 15
Ⓑ1 Graduates from Nebraska 15
Ⓑ2 Graduates from Other States 16
Ⓑ3 The Reserve Pool 16
Ⓒ Projected Surplus 17

Reference Key

A reference key has been created to enable the reader to locate topical information in all three sections of the study. For example, all information related to "teacher demand" is coded with the letter A. Subheadings of A1 (enrollment data) and A2 (attrition data) designate subtopics. Using this reference key, the reader is able to quickly locate all information on any topic in the study. All charts and supporting information are also coded in the same manner. Reference key letters are listed by topic and page number in the table of contents.

INTRODUCTION

This is a study of the supply and demand for teachers in the State of Nebraska from 1988 through 1994. A teacher is defined as a certificated person whose professional assignment is meeting children in the classroom for the purpose of providing instruction. The study includes consideration of all teachers in grades kindergarten through twelve assigned to public and nonpublic schools.

For this study, it is assumed that the current classifications of school districts will be maintained and that no major reorganization plan will be implemented. It is also assumed that the current pupil/teacher ratios by school district class will be constant. Enrollment data include students enrolled in public and nonpublic schools but does not include students enrolled in home schools.

This study is reported in three major sections. Section I provides an executive summary of the findings and implications of teacher supply and demand for the State of Nebraska. Section II relates methods and sources which support the findings in Section I. Section III includes graphs, tables, and charts of detailed statistics which contribute to an understanding of information presented in the preceding two sections and a complete listing of data sources.

Section I

EXECUTIVE SUMMARY

Quality education in Nebraska is dependent on an adequate supply of qualified teachers. In the 1987-88 school year, there are 20,954 teachers employed in all Nebraska schools. This study considers the number of certificated teachers who will be needed in Nebraska public and nonpublic schools from 1988-89 through 1993-94 compared with the number of certificated teachers available for employment during this same time.

(A) Projected Demand

Nebraska will need 11,388 new teachers by 1993-94 to staff the elementary and secondary schools:

(A1)

* No additional teachers will be needed in grades K-6 due to an enrollment growth of less than one-tenth of one percent.

* 78 additional teachers will be needed in grades 7 - 12 due to a 1% increase in enrollment.

(A2)

* 6,185 teachers will be needed to compensate for attrition in grades K-6.

* 5,125 teachers will be needed to compensate for attrition in grades 7-12.

(B) Projected Supply

By 1993-94 the supply of new teachers from all sources for Nebraska will reach 12,660. This increase comes from the following sources:

(B1) * Approximately 9,660 (1,610 annually) newly certificated Nebraska teachers will become eligible to teach.

(B2) * Approximately 3,000 (500 annually) out-of-state teachers will become eligible to teach in Nebraska schools.

(B3) <u>Reserve Pool</u>

There are 45,635 valid teaching certificates presently held by persons not employed as teachers in Nebraska schools. This number represents a potential pool of teachers who could be considered part of the supply. This is not a realistic number of available teachers in the reserve pool because many of them are no longer available to assume teaching positions for the following reasons: they are no longer living, they no longer reside in Nebraska, they have changed careers, or they choose not to teach. For these reasons, the number of persons with valid certificates and who are not employed in Nebraska schools has not been added to the supply.

Projected Results of Supply and Demand

By 1993-94, there will be 1,272 more teachers available than will be needed in Nebraska schools.

* If pupil/teacher ratios remain constant.

* If present teacher attrition rates continue.

* If the current trend continues regarding the number of Nebraska teacher education graduates who apply for Nebraska teaching certificates.

* If the inflow of teachers from other states continues at the same rate.

Chart 1

Summary of Supply, Demand, and Surplus, of Teachers in Nebraska through 1993-94

	Demand for teachers due to enrollment growth	Demand for teachers due to attrition	Total demand for teachers	Total supply*	Projected surplus
Elementary	0	+ 6,185	+ 6,185	6,937	752
Secondary	+ 78	+ 5,125	+ 5,203	5,723	520
Total	+ 78	+11,310	+11,388	12,660	1,272

* Supply does not include teachers from the reserve pool

Section II

INTRODUCTION

It appears that the current supply of certificated teachers is sufficient to meet the demand. In 1986-87, only 88 provisional, and no emergency, teaching certificates were issued by the Nebraska Department of Education (NDE). This would indicate that 99.6% of the teaching positions were filled by regularly certificated teachers.

A February, 1988, survey of Nebraska school administrators from the twelve largest school districts and twelve randomly selected smaller districts in the state indicates that there is an adequate supply of teachers to meet most of the demands for teaching assignments. Small schools reported receiving few applications for positions in music, art, and home economics. Secondary mathematics, science, and foreign language teachers were in greatest demand in larger school districts. None of the school districts surveyed indicated a lack of supply of social studies or elementary teachers.

The findings of this survey are supported by the Association for School, College and University Staffing (ASCUS) report, Teacher Supply/Demand 1987. It shows similar statistics for Nebraska and five other states in the Great Plains/Midwest region. Elementary, driver education, health, home economics, industrial arts, physical education, and social studies teachers are listed as areas of low demand. Mathematics, science, special education, computer science and bilingual education are high demand areas.

Chart 2

Association for School, College and University Staffing, Inc.
Teacher Supply/Demand 1987
for Great Plains/Midwest Region*

High Demand Fields
(from 3.6 to 5.0)**

Bilingual Education	5.00
Science - Physics	5.00
Special Education - ED/PSA	4.75
Special Education - Gifted	4.75
Science - Chemistry	4.60
Mathematics	4.60
Computer Science	4.50
Special Education - Deaf	4.50
Special Education - LD	4.40
Special Education - Multi Handi	4.33
Special Education - MR	4.20
Music - Instrumental	4.00
Music - Vocal	4.00
Science - General	4.00
Modern Language - Spanish	3.80
Science - Earth	3.75
Modern Language - French	3.60
Modern Language - German	3.60
Science - Biology	3.60

Moderate Demand Fields
(from 2.5 to 3.5)**

Special Education - Reading	3.50
English	3.40
Journalism	3.20
Business	3.00
Speech	3.00
Industrial Arts	2.67
Agriculture	2.50

Low Demand Fields
(from 1.0 to 2.4)**

Art	2.40
Health Education	2.40
Home Economics	2.25
Elementary - Primary	2.20
Elementary - Intermediate	2.00
Driver Education	2.00
Social Sciences	1.60
Physical Education	1.20

* From a survey of teacher placement officers in colleges and universities in Nebraska, Kansas, Missouri, Iowa, Minnesota, North Dakota, and South Dakota.

** 5 = Considerable Shortage, 4 = Some Shortage, 3 = Balanced, 2 = Some Surplus, 1 = Considerable Surplus

PROJECTED DEMAND

A1 Projected Enrollment Growth

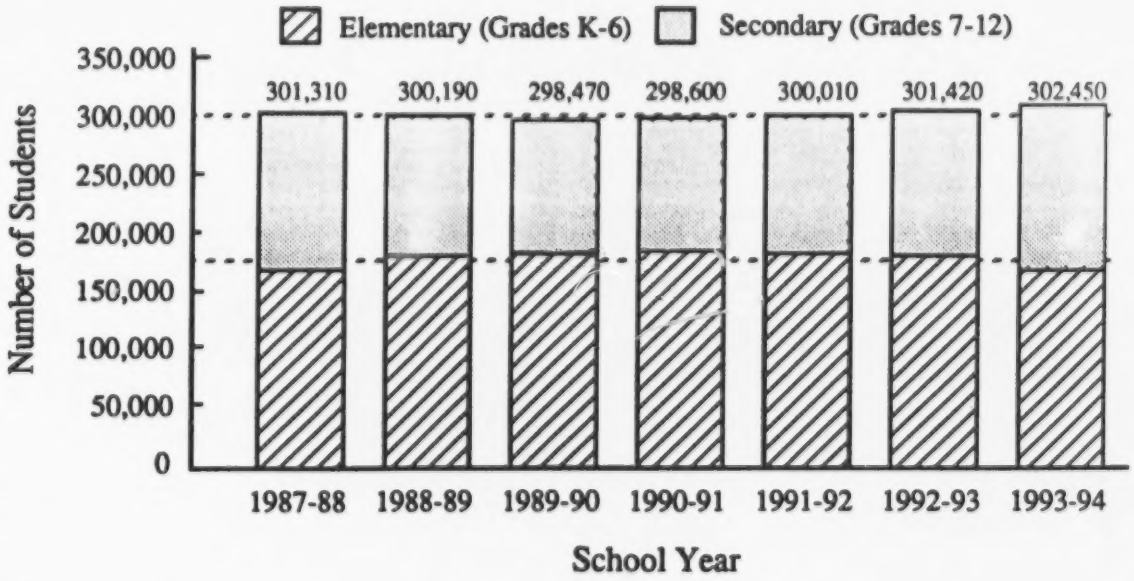
Current enrollment in grades K-12 for 1987-88 is 301,310 (169,119 in grades K-6 and 132,191 in grades 7-12).

1988 through 1990: K-12 enrollment is expected to decrease between 1987-88 and 1989-90 by 2,840 students. This is a 0.9% decrease over 1987-88. Elementary (grades K-6) enrollment will increase by 2,561 over the current total of 169,119 for an increase of 1.5%. Secondary (grades 7-12) enrollment will decrease 5,401 from the current total of 132,191. This is a decrease of 4.1%.

1988 through 1994: For this entire period through 1993-94, K-12 enrollment is expected to increase 1,140 students over the current total of 301,310. This is a 0.4% increase over 1987-88. Elementary enrollment will increase by 71 students over the current enrollment of 169,119 during this period. This increase is less than one tenth of one percent. Secondary enrollment will increase by 1,069 students over the current enrollment of 132,191. This is an increase of approximately 1%. (See Section III, part **A1** for enrollment projections by grade and the method used to project the enrollment.)

Chart 3

A1 Nebraska Public and Nonpublic School Enrollment Projections, through 1993-94



(A1) Calculating Pupil/Teacher Ratios

The terms 'class size' and 'pupil/teacher ratio' have different meanings and applications. Class size is a measure of the actual number of students assigned to one classroom teacher. Pupil/teacher ratio is computed by dividing the total number of students in a school by the total full time equivalency of certificated teachers who are assigned to that school. Class size is generally larger than the pupil/teacher ratio because the computation of the ratio includes all regular classroom teachers and teachers with specialized assignments (i.e. art, music, physical education, middle school or junior high departmentalized subjects, special education, and Chapter I).

For the purpose of this study we have used the pupil/teacher ratios calculated from 1986-87 NDE teacher data and enrollment figures. The number of teachers is reported in full-time equivalents (FTEs) rather than the actual number of individuals. Pupil/teacher ratios are held constant for demand projections in this section.

Elementary FTEs include teachers responsible for classroom instruction in grades K-6. In 1986-87 there were 10,888.57 elementary positions. The elementary pupil/teacher ratio was 16.5 to 1.

Similarly, secondary FTEs include classroom teaching responsibilites for grades 7-12. There were 8,975.44 secondary FTEs in 1986-87. The secondary pupil/teacher ratio was 13.7 to 1.

(A1) Demand Projections Due to Enrollment Growth

Assuming that pupil/teacher ratios remain constant, Nebraska will not need any additional elementary teachers due to enrollment growth through 1993-94. However, 78 additional secondary teachers will be needed due to enrollment growth in grades 7 - 12 by 1994. The net projected demand for additional teachers due to the anticipated growth in enrollment for all schools during this period is a total of 78.

(A2) Demand Projections Due to Attrition

The annual attrition rate is determined by the number of teachers who taught in the state one year and not in the following year. This includes teachers who retire, move out of the state, or stop teaching (voluntarily or involuntarily).

Data obtained from the NDE shows the attrition rate for teachers in Nebraska declining slightly during the past seven years from 13.6% to 9.3%. (See Chart 4). For this study, an annual attrition rate of 9% was used to estimate the number of teachers who do not return to Nebraska schools. This compares with recent attrition rates reported by the Rand Corporation (Teacher Attrition,1987) showing a range of 5% to 9%. (Additional information in determining the attrition rate is provided in Section III, part A2.)

An attrition rate of 9% will require the replacement of 1,030 elementary teachers and 855 secondary teachers each year, for an annual total of 1,885 replacement teachers for all schools in the state. Over the period 1988-89 to 1993-94, a constant rate of attrition will result in 11,310 teachers who leave the profession.

Chart 4

(A2) **Teacher Attrition in Nebraska Schools, 1980-81 through 1986-87**

Year	Total Teachers	Teachers Lost to Attrition	Percent Attrition
1980 - 81	20,954	2,845	13.6%
1981 - 82	20,499	2,161	10.5%
1982 - 83	20,388	2,091	10.3%
1983 - 84	20,608	2,061	10.0%
1984 - 85	20,718	2,072	10.0%
1985 - 86	20,831	1,949	9.4%
1986 - 87	20,827	1,937	9.3%

Chart 5

(A1) (A2) **Total Demand For Teachers Due to Enrollment Growth and Attrition through 1993-94**

	Teaching Positions Needed Due to Enrollment Growth	Teaching Positions Needed Due to Attrition	Total Teachers Needed
Elementary	0	+ 6,185	+ 6,185
Secondary	+ 78	+ 5,125	+ 5,203
Total	+ 78	+11,300	+11,388

(B) PROJECTED SUPPLY

There are three potential sources of teachers to meet the demands created by enrollment and attrition: new graduates from teaching institutions in the state of Nebraska, certificated teachers from other states who migrate into the state, and the reserve pool of teachers who are presently certificated by Nebraska but who are not currently teaching in Nebraska schools. The number of available teachers in the reserve pool is not considered in this study.

(B1) Graduates from Nebraska

The number of graduates from teacher education institutions in the state of Nebraska has been decreasing steadily since 1980. The 1987 total of 1,390 shows a 20% reduction from the 1980 total. If this trend continues, it is projected that 1,150 teacher candidates will graduate from Nebraska teacher education institutions in 1993.

In addition to graduates of teacher preparation programs, there are other Nebraska graduates who complete certification requirements after receiving a degree in an area outside of professional education.

Most of the teachers who complete Nebraska teacher education programs receive Nebraska teaching certificates. It is projected that 1,610 new teachers annually will provide a supply of 9,660 new teachers for the period 1988-89 through 1993-94. (See Chart 6 and Section III, part **B1**, for additional information concerning the supply of teachers from Nebraska.)

Chart 6

B1

Graduates From Nebraska Receiving Nebraska Teaching Certificates, through 1992-93

Year	Total Teacher Preparation Program Graduates	Nebraska Graduates Being Certified**
1979 - 80	1,747	1,928
1980 - 81	1,636	1,731
1981 - 82	1,519	1,636
1982 - 83	1,620	1,687
1983 - 84	1,487	1,651
1984 - 85	1,410	1,818
1985 - 86	1,468	1,829
1986 - 87	1,390	1,796
1987 - 88	1,350*	1,740*
1988 - 89	1,310*	1,690*
1989 - 90	1,270*	1,640*
1990 - 91	1,230*	1,585*
1991 - 92	1,190*	1,530*
1992 - 93	1,150*	1,475*

** Includes those who completed teacher education programs after they received their degree in an area outside of professional education.

* Projected

B2 Graduates From Other States

A number of teachers who are educated in colleges in other states migrate to Nebraska and secure valid Nebraska teaching certificates. A projected average of 500 additional teachers will be added to the available pool of Nebraska teachers from this migration annually. This will provide a total of 3,000 teachers from other states from 1988-89 through 1993-94. (The method used to project these data is included in Section III, B2, page 13 and in Chart 7.)

Chart 7

(B2) **Graduates From Other States Receiving Nebraska Teaching Certificates, 1979 - 80 through 1992 - 93**

Year	Number Being Certified
1979 - 80	782
1980 - 81	786
1981 - 82	682
1982 - 83	684
1983 - 84	580
1984 - 85	593
1985 - 86	584
1986 - 87	570
1987 - 88	550*
1987 - 89	530*
1989 - 90	510*
1990 - 91	490*
1991 - 92	470*
1992 - 93	450*

* Projected

(B3) The Reserve Pool

There are 45,635 teachers who are not presently employed in Nebraska schools and who hold valid Nebraska teaching certificates. It is inappropriate to assume that a person who holds a valid teaching certificate is available to teach and desires a teaching position. For the following reasons, data regarding this pool of teachers appeared to be questionable and was not included in supply projections:

- Some of these people are no longer living.
- Some no longer reside in Nebraska.
- Some have changed careers and will not return to teaching.
- Some have retired.
- Some no longer want to teach.

A study completed by Kirst (PACE, 1987) indicates that if these factors could be quantified it would reduce the reserve pool to the number of available teachers and provide a more accurate estimate of the total teacher supply.

(B) Total Supply

The projected supply of newly certificated teachers from other states and those who graduate from Nebraska by 1994 is 12,660. This projection does not include any teachers who may enter the teacher work force from the reserve pool.

PROJECTED SURPLUS:
SUMMARY OF SUPPLY AND DEMAND

(A2) Annual Demand

About 1,900 new teachers will be needed each year for the period 1988-89 through 1993-94 to meet growth and attrition demands.

(A2) Total Demand

Demand for teachers for the period 1988-89 through 1993-94 is expected to be 11,388.

(B2) Annual Supply

The annual supply of new teachers from all sources for the period 1988-89 through 1993-94 will be 2,110.

(B2) Total Supply

The total supply of new teachers from all sources for the period 1988-89 through 1993-94 will be 12,660.

Supply and Demand: Projected Surplus

Excluding the available number of teachers in the reserve pool, teacher supply will exceed demand in Nebraska by approximately eleven percent (11%), or by 1,272 teachers in 1994. This is a comparison of the projected number of teachers needed to the projected number of teachers available. It does not include information concerning number of teachers needed or available in specific subject areas. For this reason, even though there will be a surplus of 1,272 teachers, it can not be assumed that there will be an adequate supply of teachers in all subject areas.

Section III

PROJECTED DEMAND

A1 Projected Enrollment Growth

NDE's 1987 projections of school enrollment were used to determine enrollment data for this study. The NDE's projections are determined by using a cohort survival ratio computed from the enrollment in the preceding ten years. These figures were adjusted using the current enrollment for the 1987-88 school year. Enrollment projections for each grade are given in Chart 8.

These projections are consistent with information received from the Bureau of Business Research, College of Business Administration, University of Nebraska-Lincoln. The Bureau cites the rate of migration as the most important factor which will affect Nebraska's future population. There is evidence that Nebraska has been approaching a position of little or no net migration. The existence of a relatively large group of young adults in the population, and the resultant increase in the number of births, coupled with the decrease in out-migration, results in the increase in enrollment totals observed near the end of the prediction period (from Nebraska Population Projections: 1985-2020, 1982).

All schools will not experience an increase in enrollment during this period. For example, there is a general trend of increasing population along the I-80 corridor. Some schools in this corridor will show increased enrollment while school districts in other areas of the state may show a decrease in school population. See Chart 9 for the counties where population is expected to increase between 1980 and 1990.

A March, 1988, survey of twelve randomly selected small schools indicated that future small school enrollments will either remain stable or decrease gradually.

Enrollment projection data collected in March, 1988, from the twelve largest school districts in the state supports the state-wide enrollment projections developed by this study. Seven of these districts project an increased enrollment of approximately 1% by 1994. The other five districts anticipate an increase of 1% in enrollment by 1990. These enrollment trends show that increases will be gradual and may be assimilated into the schools in large districts without necessarily creating the need for additional teaching positions.

A2 Demand Projections Due to Attrition

Data concerning the exact number of teachers who taught in a school in Nebraska one year but not the next for each of the school years 1979-80 through 1986-87 were obtained from the NDE. These data show a decreasing rate of teacher attrition. (See Chart 4.)

Retirement directly influences teacher attrition. If a large percentage of teachers currently teaching in Nebraska are approaching retirement age, the attrition rate could increase dramatically. Twelve small schools and the twelve largest schools in Nebraska were surveyed in March, 1988, to determine the age groupings of their teaching staff. One fourth of the sample reported that 25-33% of their teaching staff are over age 55. Most large schools report having only 10% of their teachers in this category. Small schools reported that 10-50% of their teachers are over age 55. Although schools with large percentages of older teachers may experience higher rates of attrition, retirement would not dramatically affect the state average annual attrition rate of 9% as projected in this study.

Chart 8

1988-89 THROUGH 1993-94 ENROLLMENT PROJECTIONS FOR ALL PUBLIC AND NONPUBLIC SCHOOLS IN NEBRASKA BY GRADE

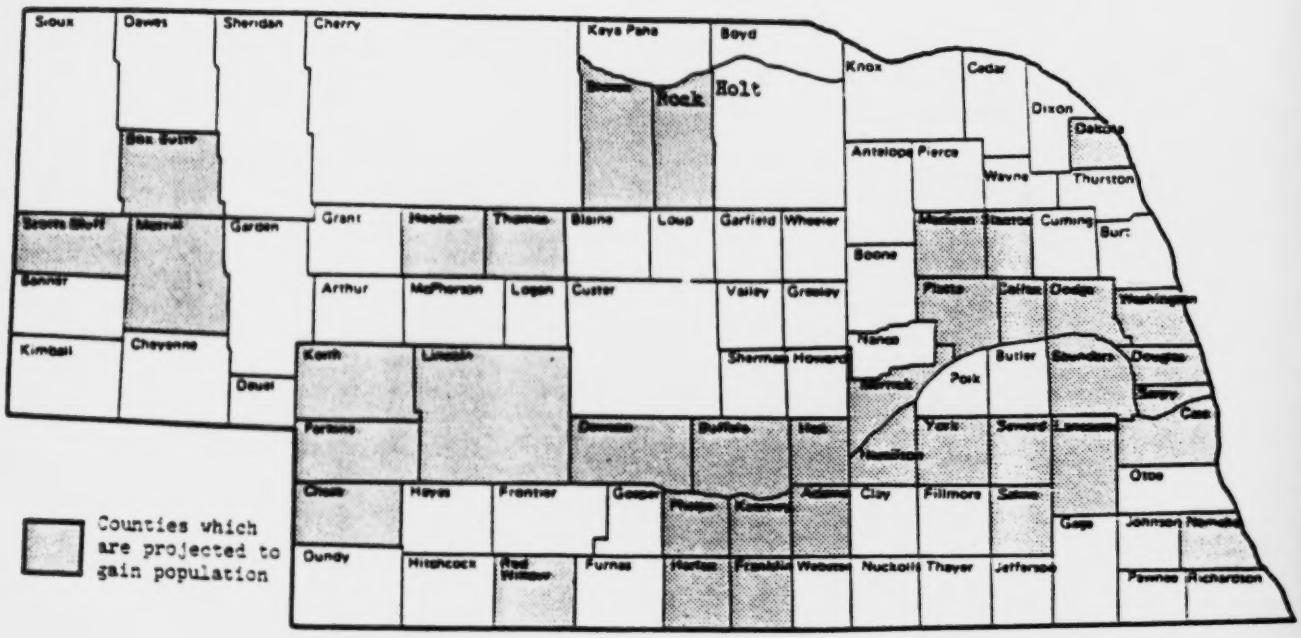
YEAR	K	1	2	3	4	5	6	K-6 TOTAL
987-88*	26223	26639	25414	23959	22895	22480	21509	169119
988-89	25100	26480	25840	25090	23720	22690	22310	171230
989-90	24240	25380	25700	25490	24840	23520	22510	171680
990-91	24420	24510	24610	25370	25250	24630	23340	172130
991-92	24540	24690	23770	24290	25130	25030	24440	171890
1992-93	24650	24800	23940	23460	24050	24920	24830	170650
1993-94	24770	24920	24060	23630	23230	237850	24730	169190
1994-95	24880	25040	24170	23740	23400	23030	23660	167920

YEAR	7	8	9	10	11	12	7-12 TOTAL	K-12 TOTAL
1987-88*	22381	21575	21184	22428	22750	21873	132191	301310
1988-89	21560	22120	21410	20930	21190	21750	128960	300190
1989-90	22360	21310	21960	21150	19770	20240	126790	298470
1990-91	22560	22090	21250	21700	19980	18890	126470	298600
1991-92	23390	22300	21930	20900	20510	19090	128120	300010
1992-93	24490	23110	22140	21670	19750	19610	130770	301420
1993-94	24890	24200	22950	21870	20470	18880	133260	302450
1994-95	24780	24600	24030	22670	20670	19560	136310	304230

*Actual enrollment

Chart 9

NEBRASKA COUNTIES WHICH ARE EXPECTED TO GROW BETWEEN 1980 AND 1990



from Bureau of Business Research, University of Nebraska - Lincoln

Nebraska's attrition rate appears to be higher than many other states. The national attrition rate for teachers, according to the National Center for Educational Statistics, is 6 percent, and was concluded from a statistical basis which dates back to data collected in 1969. The Rand Corporation (1987) recently reported a 6-8% attrition rate for teachers in Illinois, 5-6% in Utah, 7-8% in Michigan, and 9% in New York.

The attrition rate for newly certificated teachers is generally higher than for more experienced teachers. The Rand Corporation reports that annual attrition rates at state levels for young, inexperienced teachers can reach 20-25% annually. The rate then declines steeply with age or years of experience until a mid-career plateau is reached. The rates then rise again with retirement eligibility.

Information has been provided by the Nebraska State Department of Education on the groups who have most recently completed their certificate renewal cycle. Data for new teachers who were first issued Prestandard certificates during 1980 to 1982 show that 44.4% did not renew their teaching certificates after the first five years. This is equal to an average annual attrition rate of approximately 10.9%. Of the experienced teachers who were issued Standard certificates during 1978 to 1980, 32.9% failed to renew their certificates. This is an average annual attrition rate of 5.6%.

PROJECTED SUPPLY

Graduates from Nebraska

Annual totals of graduates from Nebraska teacher preparation programs were obtained from the Nebraska Coordinating Commission (NDE). Information concerning the number of teaching certificates issued upon recommendation from Nebraska institutions each year were provided by NDE.

There has been a 20% reduction in the number of graduates from Nebraska's teacher preparation programs during the seven year period 1980 to 1987. This is an average annual reduction of approximately 3%. A March, 1988, survey of teacher preparation programs in Nebraska indicated that enrollment in such programs has been stable or has increased slightly. It was also reported that the number of student teachers and graduates from such programs is declining. This decline in graduates was attributed to more stringent entry level requirements and greater expectations regarding students' performance. In projecting the number of graduates from Nebraska's teacher preparation programs from 1988 to 1993, it is assumed that this declining trend will continue at the same annual rate of 3%. This means that the 1,390 graduates from teacher preparation programs in Nebraska in 1987 will be reduced to 1,150 graduates in 1993. (See Chart 6 for annual totals for 1980 to 1993.)

A number of graduates from colleges other than teacher preparation programs enter a Nebraska teacher education program to earn an endorsement for teaching. These graduates are not included in the total of graduates from teacher preparation programs. In 1983, this number increased significantly with some fluctuation during the next two years. In projecting the total number of persons recommended for teaching certificates from Nebraska institutions, it is assumed that the number of individuals earning an endorsement after graduation will decrease at the same 3% annual rate as graduates from teacher preparation programs. (See Chart 6 for annual projection of Nebraska teaching certificates issued on the recommendation of Nebraska institutions.)

(B2) Graduates from Other States

Information provided by the NDE show that a number of teachers earn degrees in other states and are issued Nebraska teaching certificates. The total number of teachers added to Nebraska's teacher supply from this source has decreased each year since 1980 by an annual rate of almost 4%. In projecting the number of teachers who would be available from this source each year through 1993, it was assumed this same 4% decrease would occur. This means that the 570 teachers earning degrees from outside Nebraska in 1980 will decrease to 450 in 1993. (See Chart 7 for annual projections.)

(B3) The Reserve Pool

The definition of 'reserve pool' implies that the pool contains only those teachers who meet all of the following conditions:

* They hold a valid Nebraska teaching certificate.
* They are not currently employed as a teacher in Nebraska.
* They are available to teach.

It appears that there are 45,635 teachers in Nebraska's reserve pool. Although all teachers in the reserve pool hold a valid teaching certificate and are not currently employed as a teacher in Nebraska, it is inappropriate to assume that they are available to teach. For this reason, the reserve pool data for available teachers is extremely suspect and has been omitted from projections of teacher supply in this study. This results in a conservative estimate of the total teacher supply in Nebraska.

Several states have attemped to apply various strategies in an effort to accurately estimate the number of teachers in a reserve pool. For example, a group directed by Michael Kirst of Policy Analysis For California Education (PACE) surveyed a random sample of California teachers who held valid teaching certificates and who were not teaching. From this survey, they estimated that between 0% and 30% of valid certificate holders who were not teaching might be considered available to teach (Teacher Supply and Demand in California: Is the Reserve Pool a Realistic Source of Supply?, 1985). Although this range reduces the number of persons holding valid certificates who would be included in the reserve pool, it does not provide the data to more accurately project a supply of available teachers.

A study in North Carolina estimated a reserve pool of teachers by eliminating all certificate holders who had not taught in fifteen years or who were over the age of 45. This elimination method was based on the premise that people in these categories would not reenter teaching (from Teacher Supply and Demand in North Carolina Public Schools, 1986). At the present time, no accurate data concerning the ages of teachers with valid Nebraska teaching certificates exist. Currently it is impossible to use a strategy involving age to estimate a reserve pool of teachers in Nebraska for this reason.

A February, 1988, survey of randomly selected schools in Nebraska determined that there is an adequate supply of substitute teachers available in most school districts. Although substitute teachers are readily available, it cannot be assumed that they would be available for full time teaching assignments. Even though it appears that there are teachers in a reserve pool, this data was not included in the supply projections for this study due to the questionable nature of the information and the lack of a reliable source for accurate data.

PROJECTED SURPLUS

It is estimated that a total of 1,272 more teachers will receive certificates in Nebraska than will be needed to meet the demands of teaching assignments in all public and nonpublic schools in Nebraska from 1988 through 1994. In order to arrive at this conclusion, the total number of newly certificated teachers in Nebraska was compared to the total demand for new teachers caused by enrollment growth in grades K-12 and by teacher attrition. This comparison did not include an analysis of teachers available or needed in general subject areas. Therefore, even though there will be a surplus of teachers, it cannot be assumed that there will be an adequate number of teachers to meet the demands in all subject areas.

In order to project the supply and demand of teachers for each general subject area, the number of teachers needed for each subject area must be compared with the number of teachers being certificated in the same subject area. NDE provided information concerning the number of teachers employed for each general subject area in the 1987-88 school year. (See Chart 10.) Teachers are counted in each subject area they teach, causing some to be counted more than once in these data. Since the greatest demand for new teachers is caused by attrition, the number of new teachers needed in each general subject area due to loss by attrition was determined as an estimate of the total demand for new teachers for each subject area. Though it is possible that teachers in different subject areas may have different rates of attrition, it was assumed that all would be affected by the same 9% annual attrition rate for these subject area projections.

Endorsements issued by NDE are generally of two types: broad subject area endorsements and single subject area endorsements. The number of endorsements in broad subject areas can be assumed to be the number of newly certificated teachers in that subject area. For example, since mathematics is a road subject area and there were 220 teachers earning endorsement from NDE in this are during 1987, it can be assumed that there were 220 new mathematics teachers in Nebrask. hat year.

However, the number of single subj t endorsements can not be assumed to be the number of new teachers in these subjects. A general subject area, as listed by NDE, may contain several single subject endorsements. For example in the general subject area of social science/social studies, the single subject endorsements of history, geography, anthropology, economics, political science, psychology, and sociology are included. Teachers earning single subject endorsements must have at least two endorsements in single subject areas in order to receive a Nebraska teaching certificate. This means that the total number of certificated teachers endorsed in some general subject areas such as social science/social studies can not be found by adding the number of single subject endorsements in this area. A closer estimate of the number of certificated teachers endorsed in these areas could be found by dividing the total number of single subject endorsements by two.

In order to estimate the number of new teachers receiving certificates from the number of endorsements in each general subject area for this study, the number of broad subject endorsements in a subject area is assumed to equal the number of new teachers for that subject and the number of single subject endorsements in a general subject area is assumed to be twice the number of new teachers for that subject. This method will provide a conservative, yet more accurate, estimate of the number of newly certificated teachers in each general subject area than the use of the total number of endorsements in each of these areas.

A five year comparison of the number of newly certificated teachers in each general subject area to the projected number of teachers needed in each area due to attrition shows that an adequate number of teachers is being endorsed to meet demands in most subject areas. Career education and foreign language are the only subject areas in which an adequate number of new teachers has not been certificated to meet demand in each of the last five years. The number of new teachers earning an endorsement in a foreign language has been increasing. Hopefully, this trend will continue to alleviate the shortage of teachers in this subject area reported by a number of Nebraska schools surveyed in February, 1988.

Mathematics and natural sciences also showed an increase in the number of newly certificated teachers during the last five years. This is encouraging since teachers in both of these subject areas have been reported in high demand by the Nebraska schools surveyed in February, 1988. It appears that presently the number of new teachers in each of these areas is adequate to meet the demand. Of all types of science teachers, physical science teachers (physics and chemistry) were reported in highest demand by the Nebraska schools surveyed. Although the number of new physical science teachers is included in the total number of newly certificated science teachers, it may not be adequate to meet the present demand in this specific subject area.

General subject areas that have newly certificated teachers exceeding twice the projected demand are agriculture, business, diversified occupations, driver education, home economics, personal health and physical fitness, and social science/social studies. Most of the Nebraska schools included in the February, 1988, survey reported no difficulty in finding applicants for teaching positions in these subject areas. It appears that this trend will continue.

Chart 10
Comparison of Present Demand and Supply of Teachers by General Subject Area

Subject Area	Number of Teachers in 1987-88	Teachers Lost Each Year To Attrition	New Teachers Entering Supply Each Year 1983	1984	1985	1986	1987
Agriculture	133	12	24	30	26	27	32
Business	771	70	107	107	137	151	132
Career Education	84	8	3	3	6	3	6
Computer Education	613	56	No endorsement issued in Nebraska				
Diversified Occupations	24	3	24	27	12	24	25
Driver Education/Safety Ed	157	14	53	37	67	32	32
English/Language Arts	2,144	193	193	183	214	230	213
Foreign Language	581	53	49	40	55	55	57
Health Occupations	8	1	2	2	0	0	2
Home Economics	518	47	122	114	109	83	03
Industrial Arts	577	52	76	72	86	72	61
Marketing Education	51	5	10	13	13	12	13
Mathematics	1,478	133	138	149	177	217	220
Natural Sciences	1,256	113	131	136	180	177	173
Personal Health and Physical Fitness	1,428	129	291	267	302	255	269
Social Science/Social Studies	1,623	146	263	302	349	329	336
Trade and Industrial Occ.	160	14	22	33	29	21	21
Visual and Performing Arts	577	52	71	78	70	82	92
Music	1,015	91	218	191	182	166	159
Drama/Theater	29	3	46	49	44	42	25
Chapter 1 Curriculum	581	52	No endorsement issued in Nebraska				
Elementary Self-Contained Classroom	8,703	783	1,322	1,241	1,370	1,363	1,204
Middle School	Not reported by NDE		32	38	49	43	81
Special Education	1,778	160	353	262	641	358	282

* Teachers teaching in more than one area are counted in each area they serve.